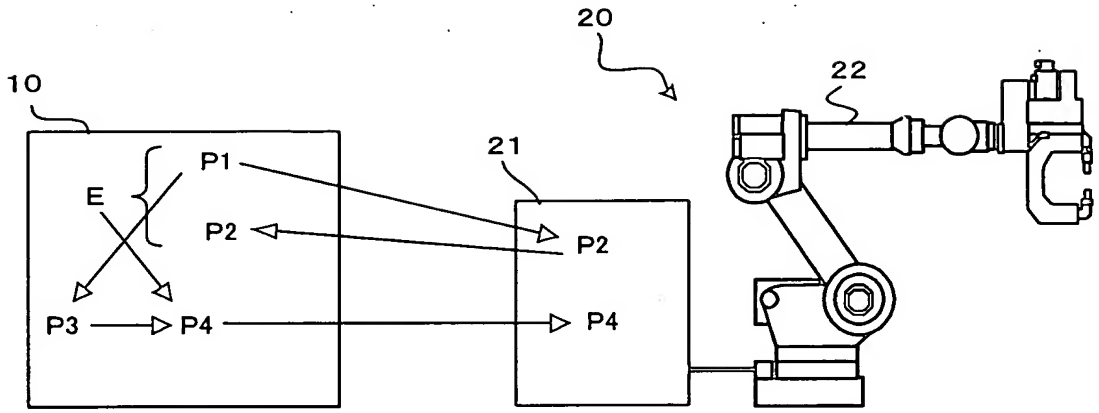
FIG. 1



P1: PROGRAM PREPARED BY OFFLINE

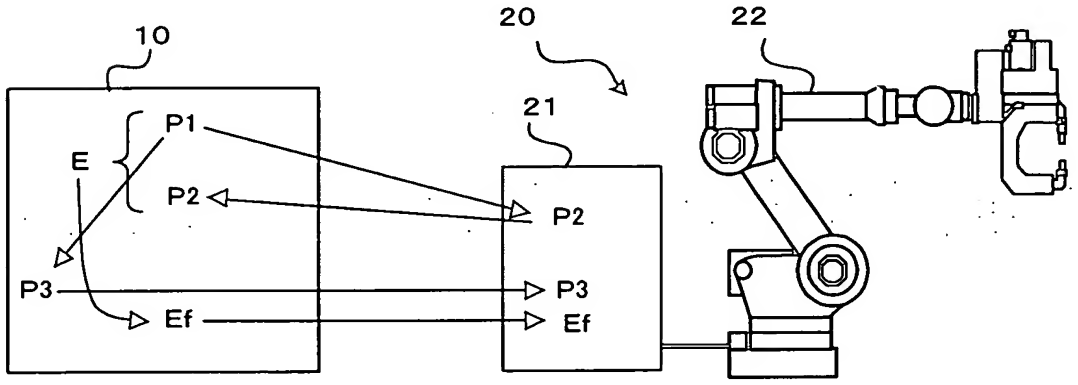
P2: PROGRAM WITH TAUGHT POSITIONS/ORIENTATIONS CORRECTED BY ROBOT CONTROLLER

E: CORRECTION AMOUNTS OF POSITIONS/ORIENTATIONS AT TAUGHT POINTS (CALCULATED BASED ON P1 AND P2)

P3: PROGRAM WITH TAUGHT POINTS ADDED/MODIFIED BY OFFLINE

P4: PROGRAM OBTAINED BY AMENDING PROGRAM P3 BASED ON CORRECTION AMOUNTS

FIG. 2



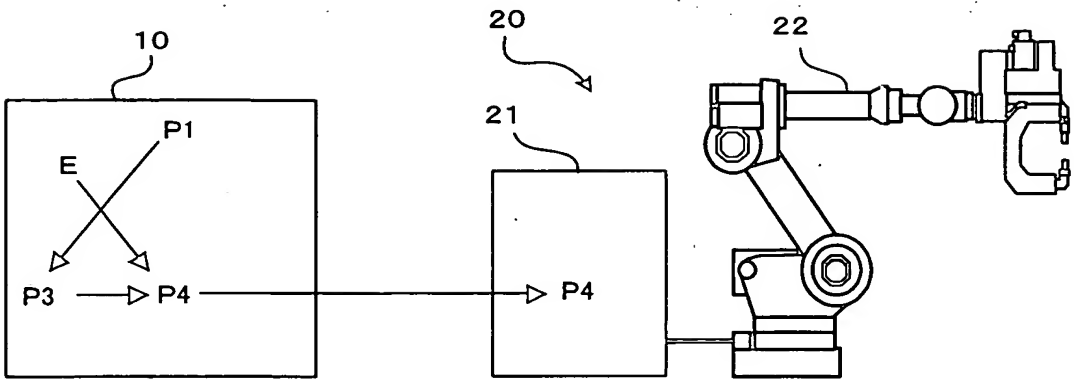
P1: PROGRAM PREPARED BY OFFLINE

P2: PROGRAM WITH TAUGHT POSITIONS/ORIENTATIONS CORRECTED BY ROBOT CONTROLLER

E: CORRECTION AMOUNTS OF POSITIONS/ORIENTATIONS AT TAUGHT POINTS (CALCULATED BASED ON P1 AND P2)

Ef: FILE CONTAINING CORRECTION AMOUNTS OF POSITIONS/ORIENTATIONS AT TAUGHT POINTS FOR PROGRAM P3

FIG. 3



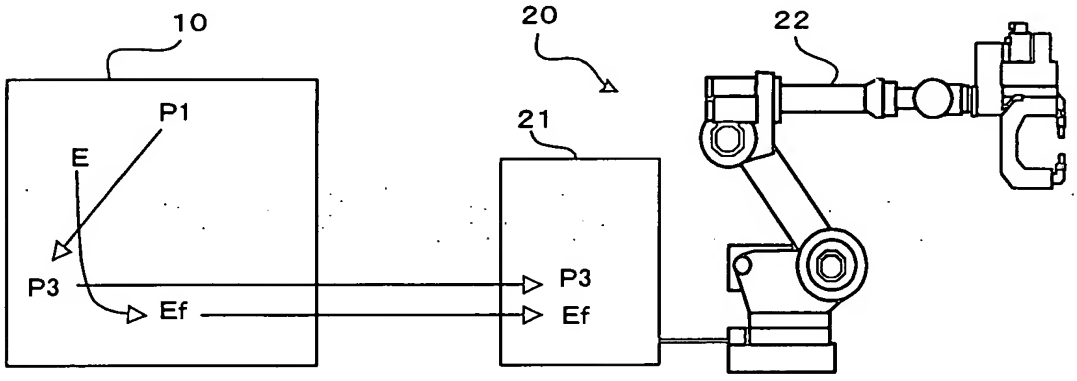
P1: PROGRAM PREPARED BY OFFLINE

E: STORED CORRECTION AMOUNTS OF POSITIONS/ORIENTATIONS AT TAUGHT POINTS

P3: PROGRAM WITH TAUGHT POINTS ADDED/MODIFIED BY OFFLINE

P4: PROGRAM OBTAINED BY AMENDING PROGRAM P3 BASED ON CORRECTION AMOUNTS

FIG. 4



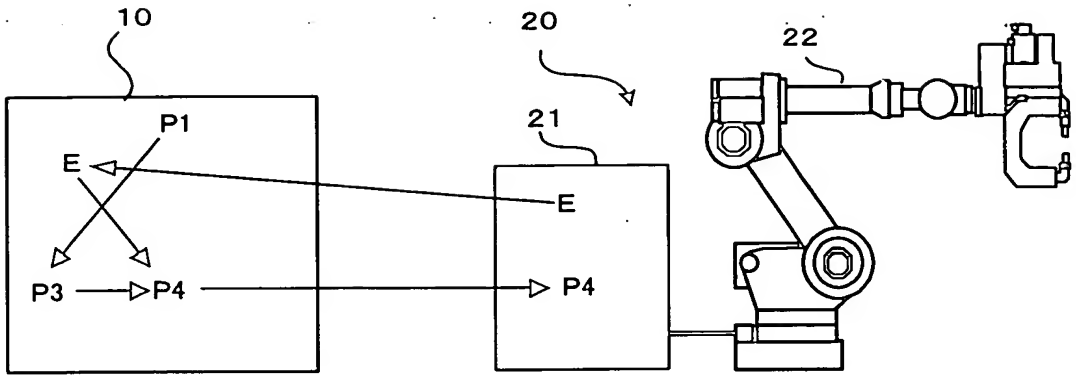
P1: PROGRAM PREPARED BY OFFLINE

E: STORED CORRECTION AMOUNTS OF POSITIONS/ORIENTATIONS AT TAUGHT POINTS

P3: PROGRAM WITH TAUGHT POINTS ADDED/MODIFIED BY OFFLINE

Ef: FILE CONTAINING CORRECTION AMOUNTS OF POSITION/ORIENTATION AT TAUGHT POINTS FOR PROGRAM P3

FIG. 5



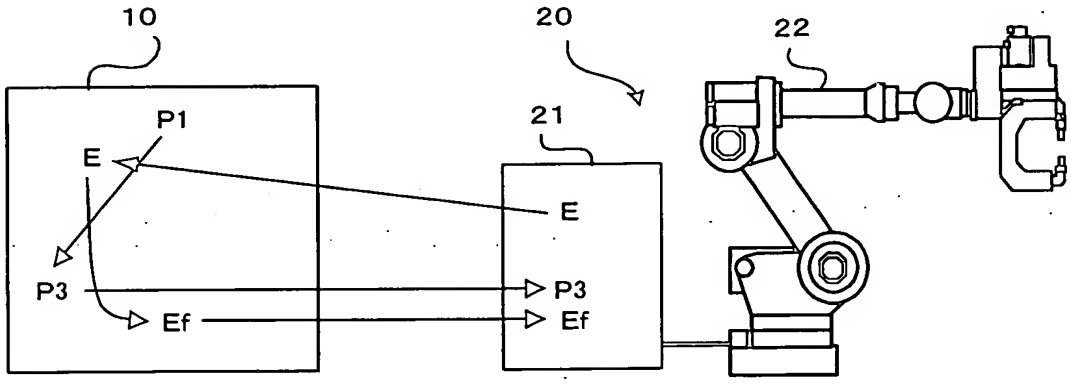
P1: PROGRAM PREPARED BY OFFLINE

E: CORRECTION AMOUNTS OF POSITIONS/ORIENTATIONS AT TAUGHT POINTS STORED IN ROBOT CONTROLLER

P3: PROGRAM WITH TAUGHT POINTS ADDED/MODIFIED BY OFFLINE

P4: PROGRAM OBTAINED BY AMENDING PROGRAM P3 BASED ON CORRECTION AMOUNTS

FIG. 6



P1: PROGRAM PREPARED BY OFFLINE

E: CORRECTION AMOUNTS OF POSITIONS/ORIENTATIONS AT TAUGHT POINTS STORED IN ROBOT CONTROLLER

P3: PROGRAM WITH TAUGHT POINTS ADDED/MODIFIED BY OFFLINE

Ef: FILE CONTAINING CORRECTION AMOUNTS OF POSITION/ORIENTATION AT TAUGHT POINTS FOR PROGRAM P3

FIG. 7

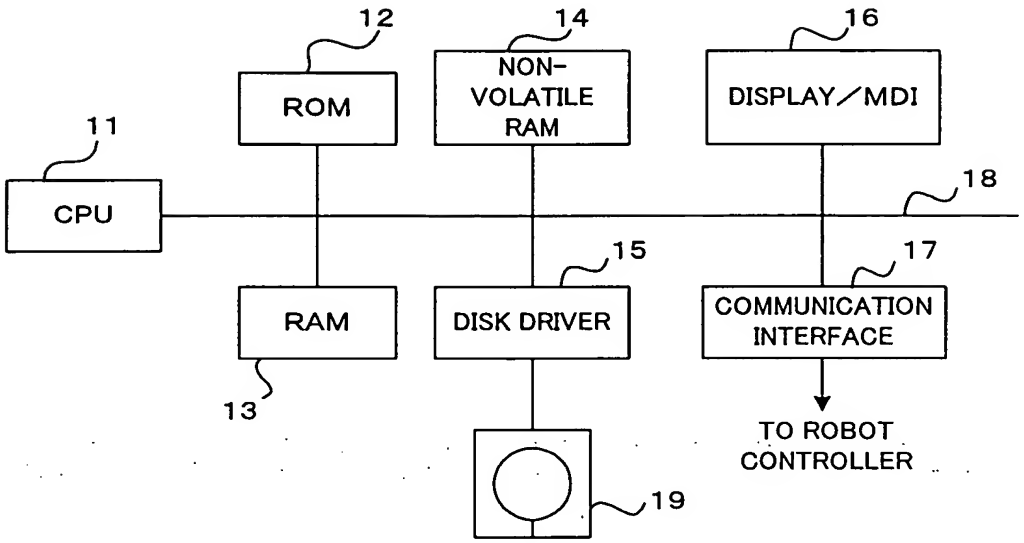

12
14
16
ROM
NON-
VOLATILE
RAM
DISPLAY/MDI
11
CPU
18
15
17
RAM
DISK DRIVER
COMMUNICATION
INTERFACE
13
TO ROBOT
CONTROLLER
19

FIG. 8

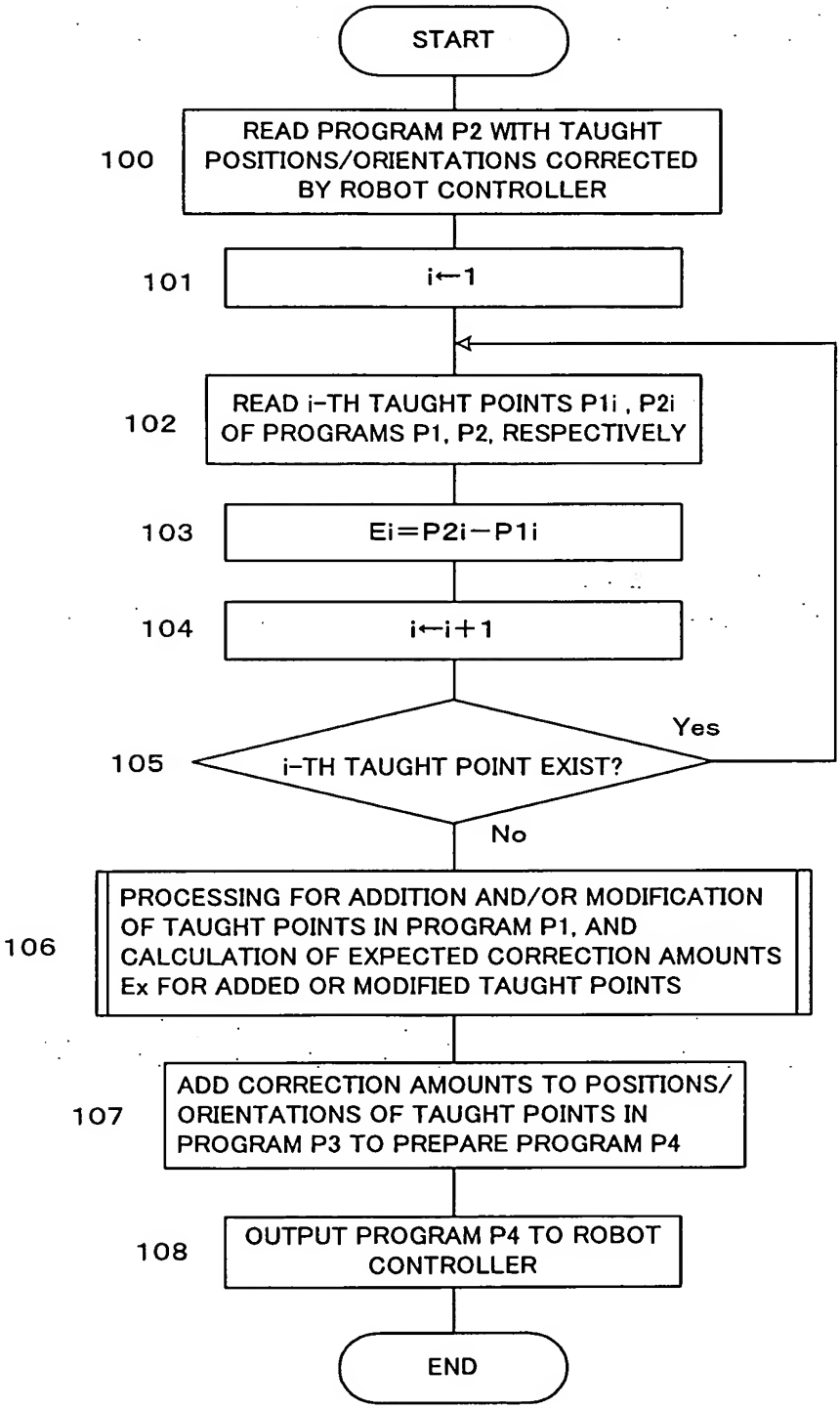

START
100
READ PROGRAM P2 WITH TAUGHT POSITIONS/ORIENTATIONS CORRECTED BY ROBOT CONTROLLER
101
i←1
102
READ i-TH TAUGHT POINTS P1i , P2i OF PROGRAMS P1, P2, RESPECTIVELY
103
Ei=P2i−P1i
104
i←i+1
105
i-TH TAUGHT POINT EXIST?
Yes
No
106
PROCESSING FOR ADDITION AND/OR MODIFICATION OF TAUGHT POINTS IN PROGRAM P1, AND CALCULATION OF EXPECTED CORRECTION AMOUNTS Ex FOR ADDED OR MODIFIED TAUGHT POINTS
107
ADD CORRECTION AMOUNTS TO POSITIONS/ ORIENTATIONS OF TAUGHT POINTS IN PROGRAM P3 TO PREPARE PROGRAM P4
108
OUTPUT PROGRAM P4 TO ROBOT CONTROLLER
END

FIG. 9

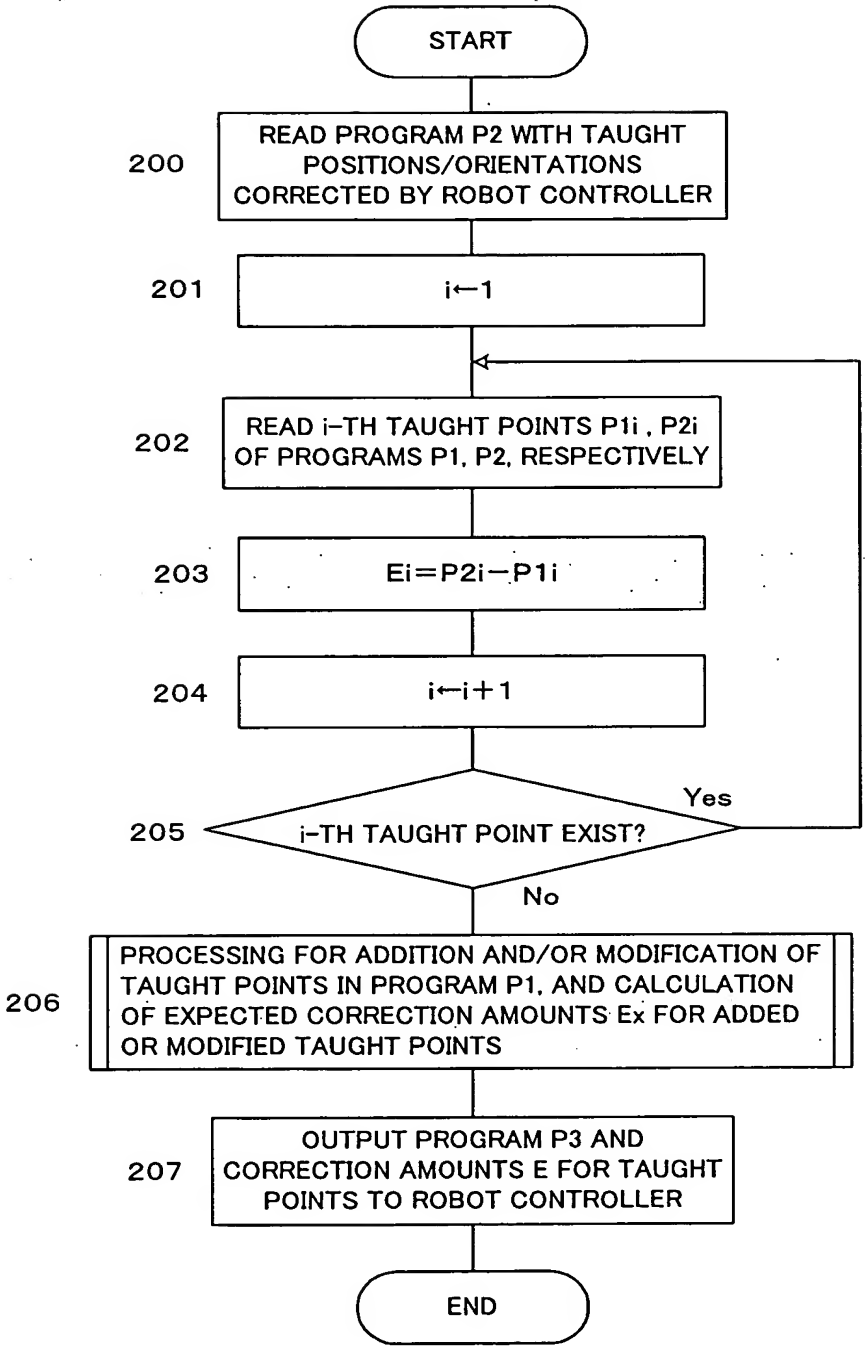

START
200
READ PROGRAM P2 WITH TAUGHT POSITIONS/ORIENTATIONS CORRECTED BY ROBOT CONTROLLER
201
i←1
202
READ i-TH TAUGHT POINTS P1i , P2i OF PROGRAMS P1, P2, RESPECTIVELY
203
Ei=P2i−P1i
204
i←i+1
205
i-TH TAUGHT POINT EXIST?
Yes
No
206
PROCESSING FOR ADDITION AND/OR MODIFICATION OF TAUGHT POINTS IN PROGRAM P1, AND CALCULATION OF EXPECTED CORRECTION AMOUNTS Ex FOR ADDED OR MODIFIED TAUGHT POINTS
207
OUTPUT PROGRAM P3 AND CORRECTION AMOUNTS E FOR TAUGHT POINTS TO ROBOT CONTROLLER
END

FIG.10

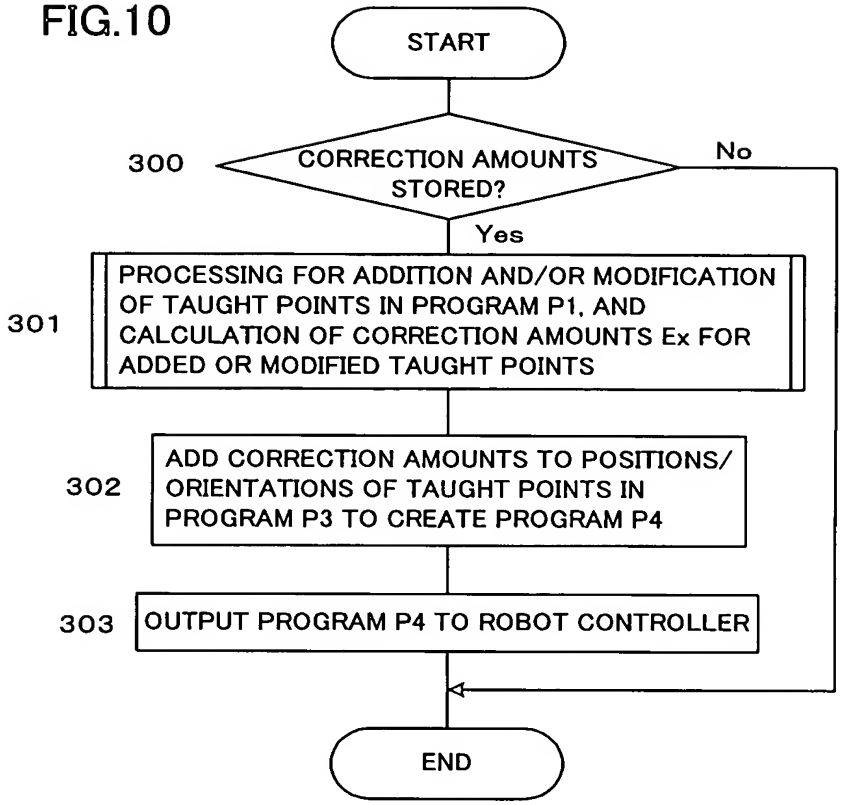

START
300
CORRECTION AMOUNTS STORED?
No
Yes
301
PROCESSING FOR ADDITION AND/OR MODIFICATION OF TAUGHT POINTS IN PROGRAM P1, AND CALCULATION OF CORRECTION AMOUNTS Ex FOR ADDED OR MODIFIED TAUGHT POINTS
302
ADD CORRECTION AMOUNTS TO POSITIONS/ ORIENTATIONS OF TAUGHT POINTS IN PROGRAM P3 TO CREATE PROGRAM P4
303
OUTPUT PROGRAM P4 TO ROBOT CONTROLLER
END

FIG.11

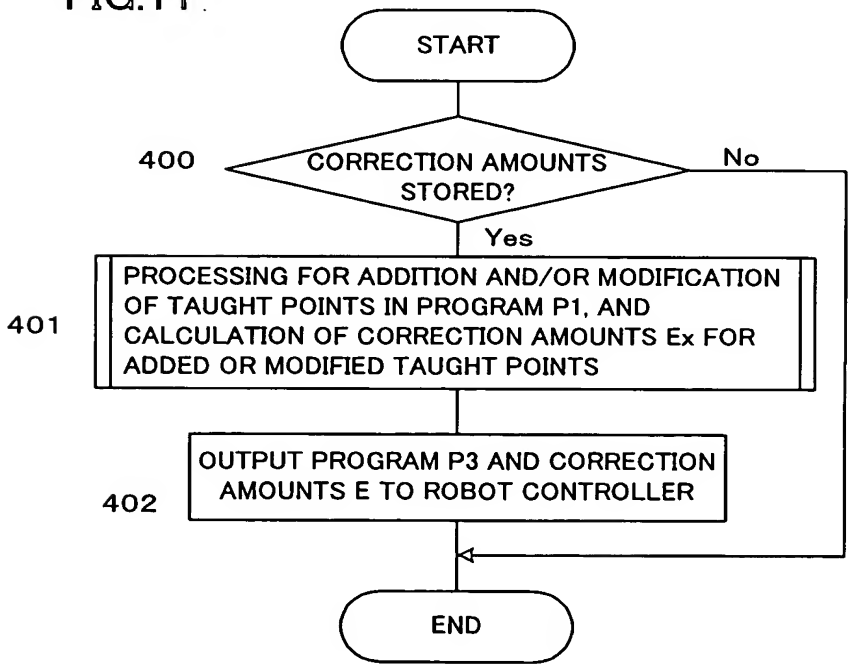

START
400
CORRECTION AMOUNTS STORED?
No
Yes
401
PROCESSING FOR ADDITION AND/OR MODIFICATION OF TAUGHT POINTS IN PROGRAM P1, AND CALCULATION OF CORRECTION AMOUNTS Ex FOR ADDED OR MODIFIED TAUGHT POINTS
402
OUTPUT PROGRAM P3 AND CORRECTION AMOUNTS E TO ROBOT CONTROLLER
END

FIG.12

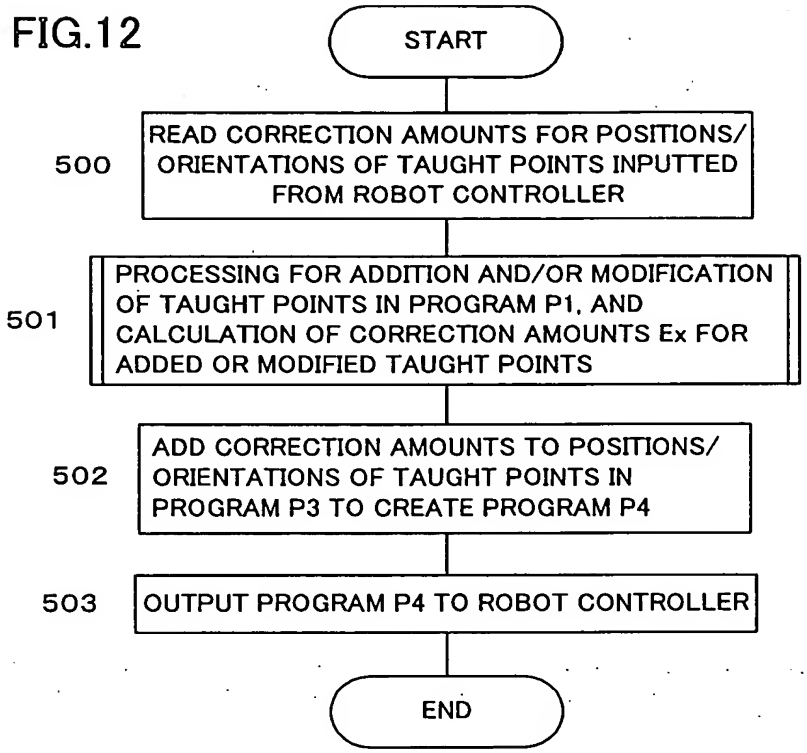

START
500
READ CORRECTION AMOUNTS FOR POSITIONS/ ORIENTATIONS OF TAUGHT POINTS INPUTTED FROM ROBOT CONTROLLER
501
PROCESSING FOR ADDITION AND/OR MODIFICATION OF TAUGHT POINTS IN PROGRAM P1, AND CALCULATION OF CORRECTION AMOUNTS Ex FOR ADDED OR MODIFIED TAUGHT POINTS
502
ADD CORRECTION AMOUNTS TO POSITIONS/ ORIENTATIONS OF TAUGHT POINTS IN PROGRAM P3 TO CREATE PROGRAM P4
503
OUTPUT PROGRAM P4 TO ROBOT CONTROLLER
END

FIG.13

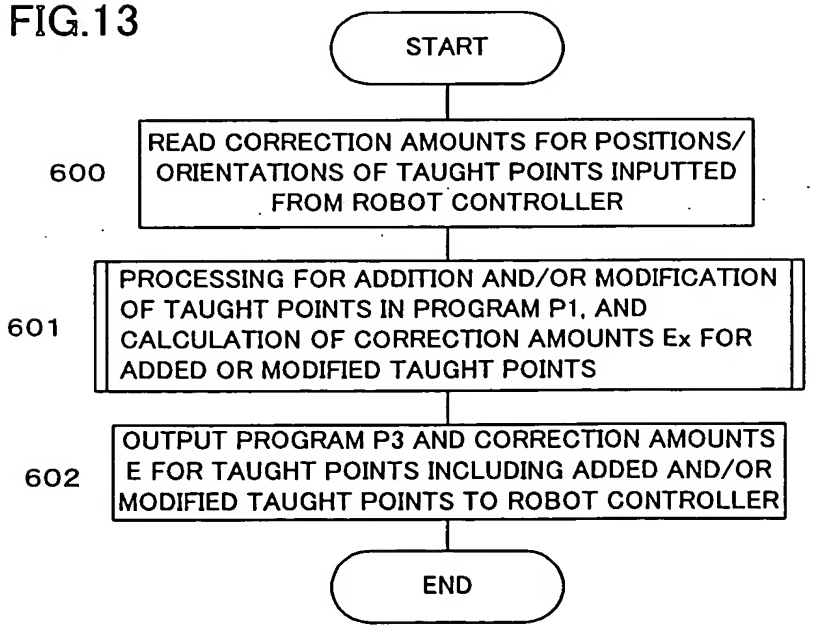
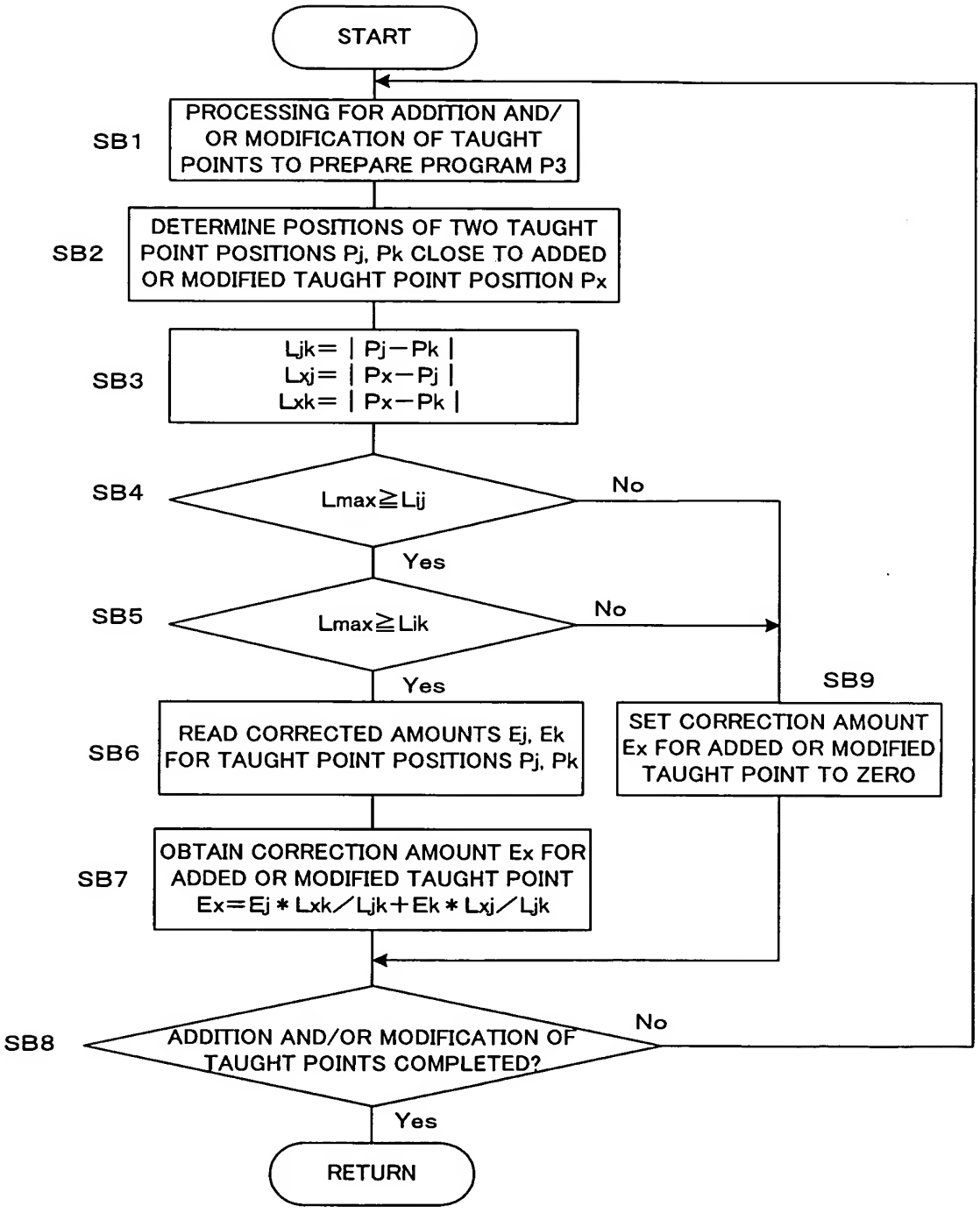

START
600
READ CORRECTION AMOUNTS FOR POSITIONS/ ORIENTATIONS OF TAUGHT POINTS INPUTTED FROM ROBOT CONTROLLER
601
PROCESSING FOR ADDITION AND/OR MODIFICATION OF TAUGHT POINTS IN PROGRAM P1, AND CALCULATION OF CORRECTION AMOUNTS Ex FOR ADDED OR MODIFIED TAUGHT POINTS
602
OUTPUT PROGRAM P3 AND CORRECTION AMOUNTS E FOR TAUGHT POINTS INCLUDING ADDED AND/OR MODIFIED TAUGHT POINTS TO ROBOT CONTROLLER
END

FIG.14


START
SB1
PROCESSING FOR ADDITION AND/OR MODIFICATION OF TAUGHT POINTS TO PREPARE PROGRAM P3
SB2
DETERMINE POSITIONS OF TWO TAUGHT POINT POSITIONS Pj, Pk CLOSE TO ADDED OR MODIFIED TAUGHT POINT POSITION Px
SB3
Ljk= | Pj−Pk |
Lxj= | Px−Pj |
Lxk= | Px−Pk |
SB4
Lmax≧Lij
No
Yes
SB5
Lmax≧Lik
No
Yes
SB6
READ CORRECTED AMOUNTS Ej, Ek FOR TAUGHT POINT POSITIONS Pj, Pk
SB7
OBTAIN CORRECTION AMOUNT Ex FOR ADDED OR MODIFIED TAUGHT POINT
Ex=Ej * Lxk/Ljk+Ek * Lxj/Ljk
SB9
SET CORRECTION AMOUNT Ex FOR ADDED OR MODIFIED TAUGHT POINT TO ZERO
SB8
ADDITION AND/OR MODIFICATION OF TAUGHT POINTS COMPLETED?
No
Yes
RETURN